

4.2.16 Plot Point Information:

Purpose: Specify the frequency at which data will be written to output files for both X-Y data

***CURVE**

NP=*npmax*

%

Where:

npmax: - plot point increment

Example: (print out every fifth data point)

***CURVE**

NP=5 %

4.2.17 Curve Data:

☞ **Note:** Currently a maximum of **5** macro and **5** micro curves may be specified per problem

Specifying Curve Data For Macro (composite) Quantities:

***MACRO**

NT=*nucuv*

Repeat the following line *nucuv* times:

NC=*nocu* X=*maidx* Y=*maidy* NAM=*tname*

%

Where:

nucuv - total number of curves

nocu: - curve number

maidx and *maidy* variable options are:

1 - e_{11}	7 - σ_{11}	13 - ε_{11}^i	19 - 30 n.a.	36 - γ_{13}^{th}
2 - e_{22}	8 - σ_{22}	14 - ε_{22}^i	31 - ε_{11}^{th}	37 - Total Time
3 - e_{33}	9 - σ_{33}	15 - ε_{33}^i	32 - ε_{22}^{th}	38 - Creep Time
4 - γ_{23}	10 - τ_{23}	16 - γ_{23}^i	33 - ε_{33}^{th}	39 - Temperature
5 - γ_{13}	11 - τ_{13}	17 - γ_{13}^i	34 - γ_{23}^{th}	
6 - γ_{12}	12 - τ_{12}	18 - γ_{12}^i	35 - γ_{12}^{th}	

tname: - name of plot file

☞ **Note:** The file(s) generated will be of the form *tname*_macro.data. If the user desires to use the same *tname* for files 2-5, a double quote, " , is entered for *tname*. Those files then will have the form:

*tname2*_macro.data

*tname3*_macro.data

etc.

(see the example on the next page for more details)

☞ **FEAMAC Note:** The file(s) generated when running **FEAMAC** will be of the form *tname*.element#.integrationpt#.feamacro.data, see section **4.1.2**.

EXAMPLE:***MACRO**

```
NT=3
NC=1  X=1    Y=7    NAM=stress      file created: stress_macro.data
NC=2  X=37   Y=13   NAM =“          file created: stress2_macro.data
NC=3  X=38   Y=13   NAM= plot %    file created: plot_macro.data
```

☞ **Note:** For the **Laminate option**, the *maidx* and *maidy* variable options are modified as follows:

1 - $\bar{\epsilon}_{xx}$	7 - \bar{N}_{XX}	15 - \bar{N}_{XY}^I	21 - 23 n.a.	31 - \bar{N}_{XX}^T	37 - Total Time
2 - $\bar{\epsilon}_{yy}$	8 - \bar{N}_{YY}	16 - \bar{M}_{XX}^I	24 - $\bar{\kappa}_{xy}$	32 - \bar{N}_{YY}^T	38 - Creep Time
3 - $\bar{\epsilon}_{33}$	9 - 11 n.a.	17 - \bar{M}_{YY}^I	25 - \bar{M}_{XX}	33 - \bar{N}_{XY}^T	39 - Temperature
4 - n.a.	12 - \bar{N}_{XY}	18 - \bar{M}_{XY}^I	26 - \bar{M}_{YY}	34 - \bar{M}_{XX}^T	
5 - n.a.	13 - \bar{N}_{XX}^I	19 - $\bar{\kappa}_{xx}$	27 - 29 n.a.	35 - \bar{M}_{YY}^T	
6 - $\bar{\gamma}_{xy}$	14 - \bar{N}_{YY}^I	20 - $\bar{\kappa}_{yy}$	30 - \bar{M}_{XY}	36 - \bar{M}_{XY}^T	

☞ **Note:** When using laminate option, resultant forces (\bar{N}_{XX} , \bar{N}_{YY} , or \bar{N}_{XY}) are output in place of stress components. To obtain associated stresses one must merely divide resultant force by overall laminate thickness. Also, the strains are mid-plane strains while $\bar{\epsilon}_{33}$ represents the average strain through the thickness.

Specifying Curve Data for Micro (subcell) Quantities:***MICRO**NT=*nucuv*Repeat the following line *nucuv* times:

```
NC=nocu LYR=lyr CELL=nssel X=maidx Y=maidy NAM=tname2
%
```

Where:

nucuv - total number of curves

- nocu:* - curve number
- lyr:* - layer number (**only required when using laminate option**)
- nsse1:* - subcell number (see next page for details on numbering)
- tname2:* - name of plot file

maidx and *maidy* variable options are:

1 - e_{11}	7 - σ_{11}	13 - ε_{11}^i	19 - Φ_{11}	25 - Ψ_{11}	31 - ε_{11}^{th}	37- Total Time
2 - e_{22}	8 - σ_{22}	14 - ε_{22}^i	20 - Φ_{22}	26 - Ψ_{22}	32 - ε_{22}^{th}	38 - Creep Time
3 - e_{33}	9 - σ_{33}	15 - ε_{33}^i	21 - Φ_{33}	27 - Ψ_{33}	33 - ε_{33}^{th}	39 - Temperature
4 - γ_{23}	10 - τ_{23}	16 - γ_{23}^i	22 - Φ_{23}	28 - Ψ_{23}	34 - γ_{23}^{th}	
5 - γ_{13}	11 - τ_{13}	17 - γ_{13}^i	23 - Φ_{13}	29 - Ψ_{13}	35 - γ_{12}^{th}	
6 - γ_{12}	12 - τ_{12}	18 - γ_{12}^i	24 - Φ_{12}	30 - Ψ_{12}	36 - γ_{13}^{th}	

- ☞ **Note:** The quantities Φ and Ψ are the possible internal state variables (constitutive model dependent).
- ☞ **Note:** For the **Laminate option**, the data will be output for both integration points within a layer. Thus 4 rather than 2 columns of data will appear in the associated output file(s), with the first 2 columns representing the x and y quantities at the lower quadrature point and the last 2 columns those associated with the upper quadrature point (see **Example P**).
- ☞ **Note:** The file(s) generated will be of the form *tname2_micro.data*. If the user desires to use the same *tname2* for files 2-5, a double quote, “, is entered for *tname2*. Those files then will have the form:
 - tname22_micro.data*
 - tname23_micro.data*
 - etc.
- ☞ **Note:** The file(s) generated when running **the laminate option** will be of the form *tname.l#_micro.data*, where # indicates the layer number, see example below
- ☞ **FEAMAC Note:** The file(s) generated when running **FEAMAC** will be of the form *tname.element#.integrationpt#.feamicro.data*, again see section **4.1.2**.

☞ **Note:** Subcell numbering is assigned according to the following algorithm.

2-D case

```
Do * IB=1,NB  
Do * IG=1,NG  
subcell number = NG*(IB-1)+IG  
* continue
```

☞ **Note:** Refer to numbers in upper left corners of subcells in Fig. 14 for example of 2-D subcell numbering scheme.

3-D case

```
Do * IA=1,NA  
Do * IB=1,NB  
Do * IG=1,NG  
subcell number = IA+(IB-1)*NA+(IG-1)*NA*NB  
* continue
```

☞ **Note:** Refer to numbers in upper left corners of subcells in Fig. 16 for example of 3-D subcell numbering scheme.

EXAMPLE:

***MICRO**

```
NT = 1  
NC=1 CELL=1 X=1 Y=7 NAM=cell %      file created:cell_micro.data
```

EXAMPLE: Assuming laminate comprised of 2 layers

***MICRO**

```
NT = 2  
NC=1 LYR=1 CELL=2 X=3 Y=2 NAM=lam-x2 %  
file created:lam-x2.l1.micro.data
```

```
NC=2 LYR=2 CELL=2 X=3 Y=1 NAM=lam-x3 %  
file created:lam-x3.l2.micro.data
```